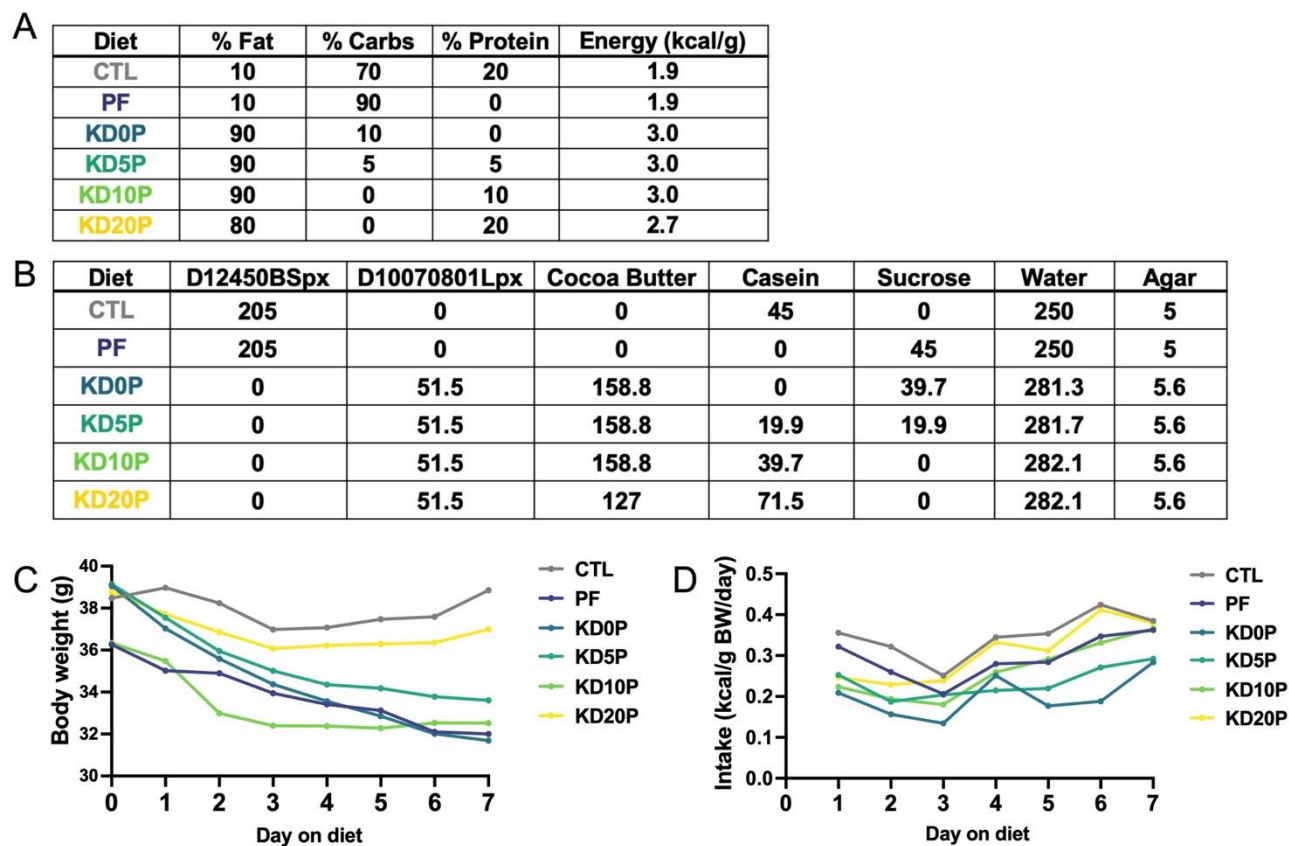


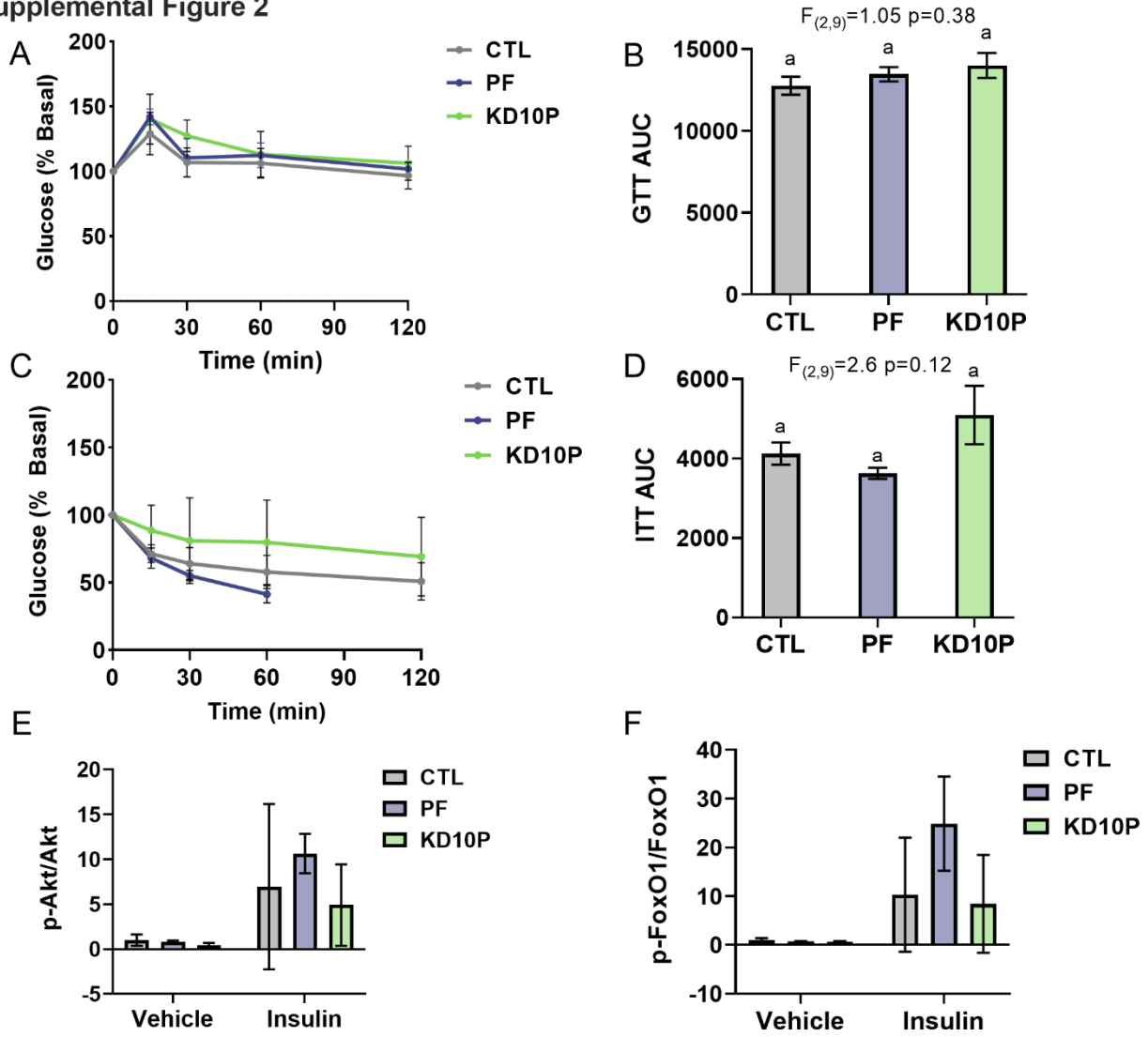
## Supplementary Material

### 1 Supplementary Figures

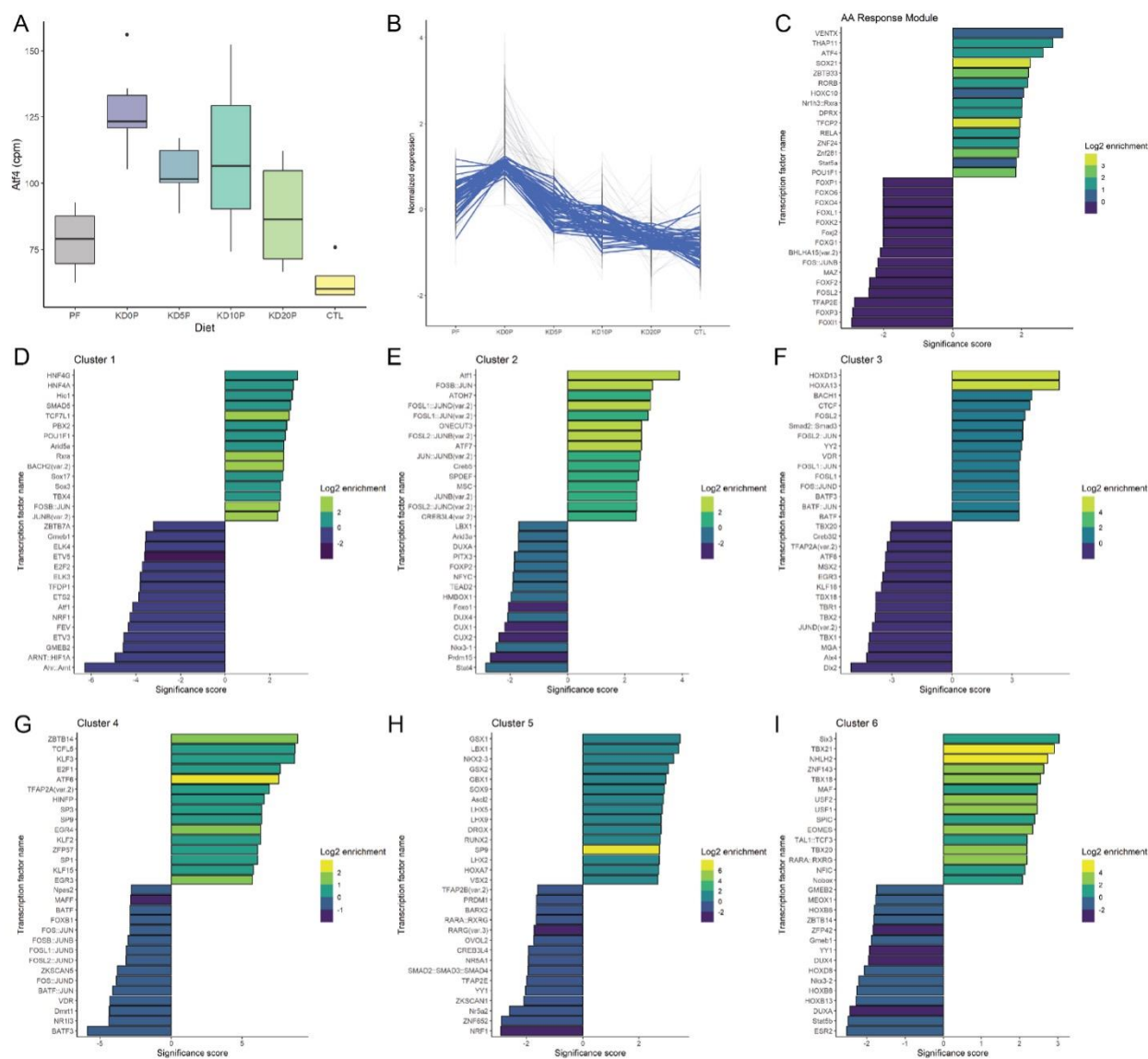


**Supplementary Figure 1.** (A) Table of macronutrient compositions and energy densities of the experimental diets. (B) Table of ingredients in experimental diets in grams. (C) Body weights in grams across 7 days of feeding experiments diets. (D) Energy intakes in kcals per gram body weight per day across 7 days of feeding experimental diets. Intake was normalized to the summed body weight of 2 mice co-housed per cage and presented per cage.

Supplemental Figure 2



**Supplementary Figure 2.** (A) Blood glucose levels during oral glucose tolerance test, normalized to baseline and (B) corresponding area under the curve (AUC). (C) Blood glucose levels during insulin tolerance test normalized to baseline and (D) corresponding AUC. (E) Quantification of phospho-AKT normalized to total AKT by western blot. (F) Quantification of phospho-FoxO1 normalized to total FoxO1 by western blot.



**Supplementary Figure 3.** (A) Hepatic *Atf4* transcript levels as counts per million (cpm) across experimental diets. (B) Weighted gene correlation network analysis module containing amino acid responsive genes including *Psat1*, *Asns* and *Fgf21*. (C) Top 10 enriched and depleted transcription factor binding motifs corresponding to the module in B. (D-I) Top 10 enriched and depleted transcription factor binding motifs in clusters 1 through 6.

## D12450BS and D12450BSpx

Water Suspendible Rodent Diet With 10 kcal% Fat  
and Same without Added Protein

Product #	D12450BS		D12450BSpx	
%	gm	kcal	gm	kcal
Protein	19.2	20.0	0.0	0.0
Carbohydrate	67.3	70.0	83.3	87.5
Fat	4.3	10.0	5.3	12.5
Total		100.0		100.0
kcal/gm	3.85		3.81	
Ingredient	gm	kcal	gm	kcal
Casein, 80 Mesh	0	0	0	0
Casein, Enzyme Hydrolyzed	200	800	0	0
L-Cystine	3	12	0	0
Sucrose	350	1400	350	1400
Maltodextrin 42	350	1400	350	1400
Cellulose, BW200	40	0	40	0
Xanthan Gum	10	0	10	0
Soybean Oil	25	225	25	225
Lard	20	180	20	180
Mineral Mix S10011	0	0	0	0
Mineral Mix S10026	10	0	10	0
DiCalcium Phosphate	13	0	13	0
Calcium Carbonate	5.5	0	5.5	0
Potassium Citrate, 1 H <sub>2</sub> O	16.5	0	16.5	0
Vitamin Mix V10001	10	40	10	40
Choline Bitartrate	2	0	2	0
FD&C Yellow Dye #5	0.05	0	0.05	0
<b>Total</b>	<b>1055.05</b>	<b>4057</b>	<b>852.05</b>	<b>3245</b>

**Table S1 Composition of low fat base diet**



## D10070801L And D10070801Lpx

Formulated by:  
Research Diets, Inc.  
Steven Yeung  
December 2018

### Water Suspendible Rodent Diet With 90 kcal% Fat (Mostly Cocoa Butter)

Product #	D10070801		D10070801L		D10070801Lpx	
	gm%	kcal%	gm%	kcal%	gm%	kcal%
Protein	17	10	17	10	0	0
Carbohydrate	0	0	0	0	0	0
Fat	67	90	67	90	20	100
Total		100		100		100
kcal/gm	6.7		6.7		1.8	
Ingredient	gm	kcal	gm	kcal	gm	kcal
Casein	100	400	100	400	0	0
L-Cystine	1.5	6	1.5	6	0	0
Corn Starch	0	0	0	0	0	0
Maltodextrin 10	0	0	0	0	0	0
Sucrose	0	0	0	0	0	0
Cellulose, BW200	50	0	40	0	40	0
Xanthan Gum	0	0	10	0	10	0
Soybean Oil	25	225	25	225	25	225
Lard	0	0	0	0	0	0
Cocoa Butter	381	3429	381	3429	0	0
Primex	0	0	0	0	0	0
Mineral Mix, S10026	10	0	10	0	10	0
DiCalcium Phosphate	13	0	13	0	13	0
Calcium Carbonate	5.5	0	5.5	0	5.5	0
Potassium Citrate, 1 H <sub>2</sub> O	16.5	0	16.5	0	16.5	0
Vitamin Mix, V10001	0	0	0	0	0	0
Vitamin Mix, V10001C, 10x vitamins	1	0	1	0	1	0
Choline Bitartrate	2	0	2	0	2	0
Cholesterol	0	0	0	0	0	0
Sodium Cholic Acid	0	0	0	0	0	0
FD&C Yellow Dye #5	0.025	0	0.025	0	0.025	0
FD&C Red Dye #40	0.025	0	0.025	0	0.025	0
FD&C Blue Dye #1	0	0	0	0	0	0
<b>Total</b>	<b>605.55</b>	<b>4060</b>	<b>605.55</b>	<b>4060</b>	<b>123.05</b>	<b>225</b>

Research Diets, Inc.  
20 Jules Lane  
New Brunswick, NJ 08901 USA  
info@researchdiets.com

MacArthurM02.for

**RESEARCH  
DIETS**  
INC.  
www.ResearchDiets.com

**Table S2 Composition of high fat base diet**